

gave little attention to scientific pursuits. He was the first to make known in England Dr. Schoenbein's process for manufacturing gun-cotton, and was the inventor of what is known as parchment paper. He was elected a Fellow in 1845 June, as a member of the Spitalfields Mathematical Society, but never contributed any paper to this Society.

GEORGE TURNBULL was born at Luncarty on 1809 September 2. He received his early education at the Perth Grammar School, and finished his studies at Edinburgh University, after which he came to London to study engineering under Telford, one of whose most trusted assistants he became. Mr. Turnbull was in 1829 elected an Associate of the Institution of Civil Engineers, and until Telford's death in 1834 was his professional representative and confidential clerk, and was connected with a large number of important dock, harbour, and other works. Among these may be mentioned the Bute Docks at Cardiff, the Folkestone and Dover Harbour works, the Shakspeare Tunnel, and the Great Northern Railway. In 1850 he was selected for the responsible position of Chief Engineer of the East Indian Railway, an appointment which he held till 1863, when he retired from active professional life, but he was afterwards employed as arbitrator in various disputes connected with Indian railways. He was in India during the Mutiny, and gave many proofs of his energy and courage in the conduct of engineering works in spite of opposition and difficulty.

Mr. Turnbull became a Member of the Institution of Civil Engineers in 1840, and was elected a Fellow of this Society in December of the same year. He was a Member of the Senate of the University of Calcutta, and a Fellow of various other societies. In 1875 he settled at Rose Hill, Abbott's Langley, on a small estate which he had purchased, where he lived in retirement till his death on 1889 February 29.

W. MATTIEU WILLIAMS was born in London 1820 February 6. His father was Welsh, and his mother Swiss. He was unfortunate in losing his father when quite young, and his mother having married again when he was only eleven years old, he was at that early age obliged to leave school, and thrown entirely on his own resources. He was, however, adopted by a friend of his father, Mr. Z. Watkins, who eventually bequeathed a large fortune to him. Through him he was apprenticed to Mr. Street, optical instrument maker, of London, and for the next nine years he attended, after office hours, the night classes at the Mechanics' Institute, and spent his half-holidays and spare moments in reading. Owing to a great capacity for grasping details and an aptitude for mastering difficulties, he was at the age of nineteen well up in most subjects, but with a decided predilection for the physical sciences. He then, by the help of Mr. Watkins, went through a course of study at the Royal Infirmary at Edinburgh, but he was of too sensitive a disposition to become a good surgeon.

When Mr. Williams came of age he inherited some money from his father, and decided to spend two or three years in travelling, for the purpose of finishing his education. He travelled, always on foot, through France, Switzerland, Italy, Greece, and on to Constantinople. He then returned to Edinburgh, and became acquainted with George Combe, with whose views on education he was in hearty sympathy; and a result of their friendship was the founding of the Williams Secular School, in which experimental science formed an important part of the curriculum.

He went to Birmingham in 1854, and at the foundation of the Birmingham and Midland Institute he was appointed master of the classes then being formed in the industrial department. In 1862 Mr. Williams invented a special retort for distilling paraffin from "cannel" coal, and in 1863 was appointed analytical chemist to Sir John Brown & Co.'s Atlas Iron Works at Sheffield; and it was during this time that he wrote his first book, entitled *The Fuel of the Sun*.

In 1872 Mr. Williams came to Norwood, and gave up his time to writing and lecturing. He gave several lectures at the Royal Institution, and three courses of Cantor Lectures on mathematical instruments, iron and steel, and chemistry of cookery, at the Society of Arts.

Mr. Williams was a large contributor to scientific and educational journals, especially under the headings of "The Chemistry of Cookery," "The Chemistry of Iron and Steel Manufacture," "The Philosophy of Clothing," "Science in Short Chapters," and "Through Norway with a Knapsack." He was elected Fellow of this Society on 1872 June 14, and of the Chemical Society on 1857 May 18. He died on 1892 November 28.

S. T. K.

ANNIBALE DE GASPARIS, foreign Associate of this Society, and formerly Director of the Royal Observatory of Capodimonte, and Professor of Astronomy of the Royal University of Naples, died on 1892 March 21.

Born in Bugnara, in the Province of Aquila, 1819 November 9 (his father being parish doctor of this small village), A. de Gasparis made his first studies at the seminary of Chieti, and there became familiar with the classic writers for whom he ever after manifested a great love and predilection.

In 1838 he came to Naples to study mathematics, of which he had already taught himself the elements. For a time he was a student at the school of engineering, but previous to completing his engineering course he became possessed of a passion for astronomy, and asked and obtained the permission of Capocci to be admitted as a pupil of the Royal Observatory of Capodimonte. He there soon became distinguished for his love of science, and his rare aptitude for observation and diligent calculation. Notwithstanding his exceptional gifts he remained for